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Abstract

URANIUM AND THORIUM ORE RESERVES AND POTENTIAL

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The confusion that exists concerning presently estimated reserves of uranium and thorium results largely from the loose usage of the term 'reserves'. Therefore, the terms 'reserves', 'potential' and 'resources' are defined and an indication given of the degree of confidence that can be placed in published or reserved data.

A brief account is given of the history of the discovery of the major uranium fields and of the build-up of ore reserves during the period 1945-55. Reserve data are discussed and comments made on the potential of the known fields as well as of the possibility of finding additional provinces with comparable tonnages of ore. It is noted that no major ore deposit has been found since 1955 and that uranium reserves at the end of 1961 have been revised downwards by more than 30% as compared with figures for the end of 1958. This has resulted because ore reserves were estimated mainly from surface and borehole data which gave an inadequate picture of changes occurring in depth.

Of equal importance to reserves, from the long-term point of view, is the availability of ore. It is noted that if no major discoveries of uranium are made and current production maintained, by 1975 the reserves of the U.S.A. will be largely depleted and output in subsequent years can be expected mainly from the Republic of South Africa and from Canada. However, production from the former country is not likely to exceed 6000-7000 tons U_3O_8 a year and the output from the latter may not bear a normal relationship

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to her total reserves, since approximately half the known uranium ore is in one property.

Comments are made on the changes in prospecting technique that will be necessary to locate hidden deposits of uranium and thorium. Also, an indication is given of the basic research required to minimize the cost of exploration for additional ore when this becomes essential. Reserves of thorium are not known with the same degree of certainty as for uranium, but tentative figures indicate that they are of the same order as for uranium.